

Winter Storm Frida

Statewide Weather Event

 VDOT Chief of Maintenance and Operations Kevin Gregg

Jan. 11, 2022



**Commonwealth
event**



**500,000
customers
without
power**

WINTER STORM FRIDA

**14 inches of
snow falling at
rates up to 3
inches
per hour**



**One million
cubic yards
of debris**



RELEASE: IMMEDIATE

Jan. 2, 2022

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WINTER STORM EXPECTED TO IMPACT TRAVEL STATEWIDE

Accumulating snow expected overnight Sunday into Monday; Motorists urged to monitor local conditions

RICHMOND, Va. – Winter weather with widespread impacts is expected to start overnight Sunday in the Commonwealth. Despite the current warm temperatures, the Virginia Department of Transportation is urging motorists to watch local forecasts and conditions, and be prepared to adjust travel, as needed, due to snow expected statewide.

The current forecast indicates this will be a significant event that will impact travel throughout the state. Snowfall could reach rates of two inches per hour, which would reduce safe visibility.

VDOT reminds motorists, if there is snow or ice on roadways, travel is hazardous.

Pre-treatment is not planned as the storm is expected to start as rain, which lessens the effectiveness of anti-icing materials. With the risk of high winds, contractors are on standby



Agency Preparations

Saturday, Jan. 1, 2022

Communications began when National Weather Service forecasts pointed to snow potential

Sunday, Jan. 2, 2022

Statewide winter weather call with VDOT, Virginia State Police and the Virginia Department of Emergency Management on operational preparation

- DTN forecast | Local National Weather Service coordination
- Crews prepared for impending weather
- District reporting and supply and staffing checks
 - VDOT staff & contractor teams
 - Total equipment prepared
 - Crews staged for snow clearing
- VDOT and contractor equipment preparation

Heightened public messaging

- News releases (statewide and multiple district releases)
- 511 Virginia updates throughout
- Social media
 - Twitter (13 posts)
 - Facebook (seven posts)
 - Instagram (six stories posts)
- Team conducted more than 14 media interviews

Storm Overview

Monday, Jan. 3, 2022

- Storm starts as rain eliminating opportunities for pretreatment
- Up to two inches of rain fell before transition to snow
- High winds contributed to downed trees and loss of power
- Rain transitions to heavy, wet snow at 1:15 a.m in Bristol District and spreads east across the state

Snow start & end times

District	Snow Start Time	Snow End time	Temperature at storm start	Temperature at storm end
Bristol	1:15 a.m.	11 a.m.	46°	21°
Salem	1:35 a.m.	12 p.m.	58°	21°
Staunton	1:55 a.m.	11 a.m.	60°	10°
Lynchburg	5:35 a.m.	1 p.m.	55°	25°
Richmond	6:44 a.m.	4 p.m.	52°	19°
Hampton Roads	12 p.m.	6 p.m.	60°	25°
Culpeper	2:53 a.m.	12 p.m.	63°	17°
Fredericksburg	5:55 a.m.	4 p.m.	54°	17°
Northern Virginia	2:05 a.m.	2 p.m.	61°	25°

Snowfall totals

District	Total snowfall amount
Bristol	8 inches
Salem	11 inches
Staunton	9 inches
Lynchburg	6 inches
Richmond	7.9 inches
Hampton Roads	4 inches
Culpeper	14 inches
Fredericksburg	14.6 inches
Northern Virginia	12 inches

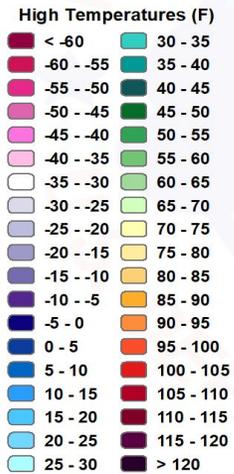
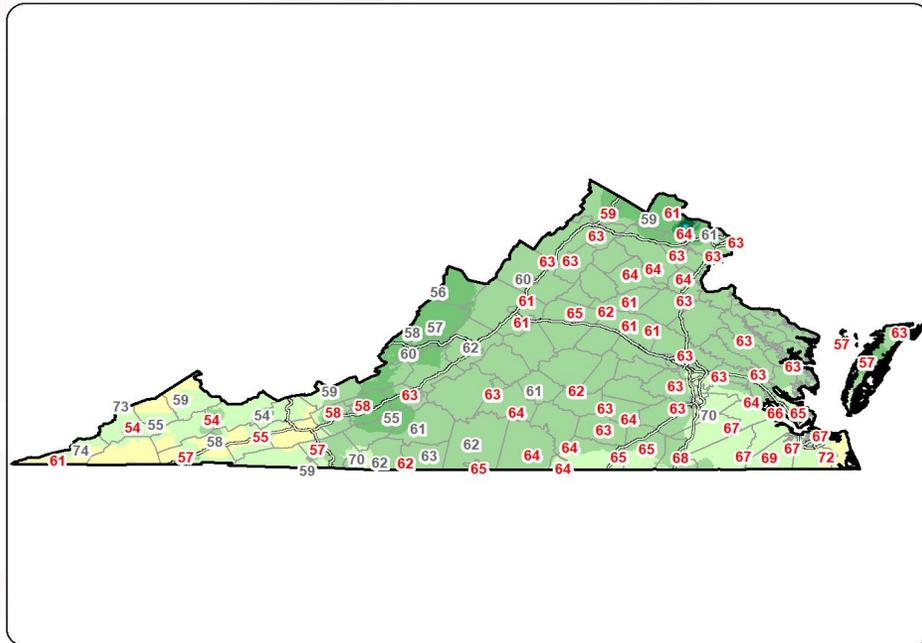
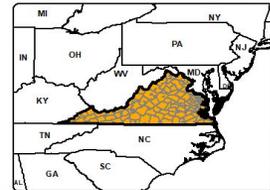
Temperatures

High temperatures



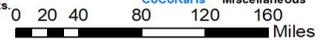
National Weather Service State of Virginia

24 Hour High Temperatures Ending 7AM 01-03-2022



This map is an experimental interpolation of actual reported values as well as the Real-Time Mesoscale Analysis (RTMA), but should be considered an estimation only. Not all reports used in the analysis will be displayed due to space constraints. Reports are 24 hour high temperatures from yesterday morning through this morning.

Data Sources: NWS COOP ASOS/AWOS Mesonet
CoCoRaHS Miscellaneous

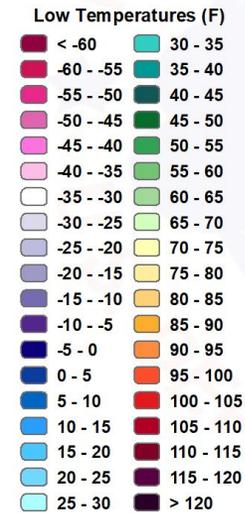
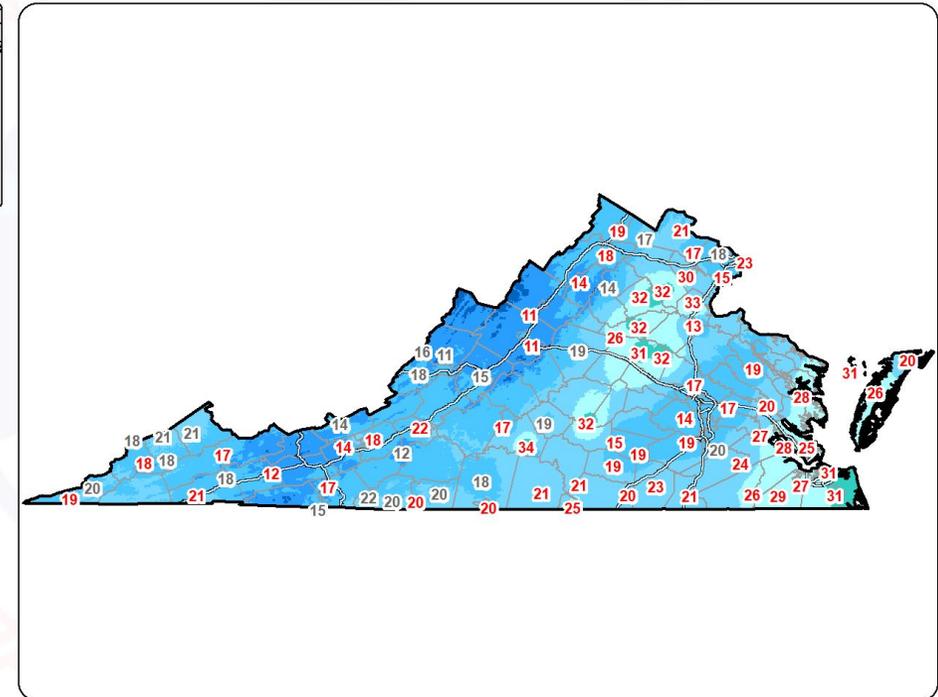
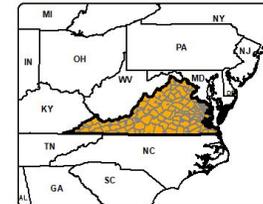


Low temperatures



National Weather Service State of Virginia

24 Hour Low Temperatures Ending 7AM 01-04-2022



This map is an experimental interpolation of actual reported values as well as the Real-Time Mesoscale Analysis (RTMA), but should be considered an estimation only. Not all reports used in the analysis will be displayed due to space constraints. Reports are 24 hour low temperatures from yesterday morning through this morning.

Data Sources: NWS COOP ASOS/AWOS Mesonet
CoCoRaHS Miscellaneous



Variables of storm

Unique extreme statewide weather event

- Balmy weekend weather to subfreezing temperatures
- Heavy rain and high winds
- Historic snow rates up to 3 inches per hour

Heavy traffic

- I-95 corridor traffic volumes were high
 - Holiday weekend, work week start, flights cancellations

Truck challenges

- Commercial vehicles had trouble climbing hills with conditions
- Disabled trucks caused multiple blockages on the corridor Monday

Power outages

- Power outages caused cell service challenges to communicate with field personnel
- Traffic cameras offline impacting the real-time view of lane closures, crashes and clearance response

Downed trees

- Wet, heavy snow caused widespread downed trees that blocked roads; roads closed for trees and tree debris
- Tree contractors alerted in advance, but travel to I-95 scene took several hours due to navigating closures on parallel roads

Alternate routes blocked

- Major impacts on alternate routes, including I-66, I-81 and Route 1 | Teams has to ensure there were passable roadways before closing I-95

Agency Response

Focus

- Recovery of our system
- Safety of the traveling public

Partnerships

- Virginia Department of Transportation
- Virginia State Police
- Virginia Department of Emergency Management
- Local first responders and law enforcement

Alternative strategies

- Wireless Emergency Alert (WEA)
- In-cab truck messages
- Aerial survey to assess situation and deploy targeted strategies
- Motorist wellness checks (VSP and local law enforcement)



@VaDOT · Jan 3
Crews will continue snow operations overnight. Snow removal operations have also been hampered by thousands of fallen trees & downed power lines that must be removed to open the roads. Please continue to avoid nonessential travel.
For more: bit.ly/3pO8wW4



After-Action Report

Multi-agency report with Virginia Department of Transportation, Virginia State Police and Virginia Department of Emergency Management

- Weather overview
- Public messaging before, during and after the storm
- Mobilization and resources
- Intra-agency and inter-agency communications
- Coordination with partner agencies
- VDOT snowplow operations
- Lessons learned
- Innovative strategies
- Comprehensive timeline
- Humanitarian response



VDOT Fredericksburg @VaDOTFRED · Jan 3
Please ❄️ do not travel at this time ❄️

Roads in the Fredericksburg area are snow-covered, with little to no pavement visible. Blowing and falling snow has severely limited visibility. Stay safe and help our crews make progress by staying off the roads during the storm.

1.7K views 0:05 / 0:06

13 16



January 11, 2022

Winter Storm Frida, Jan 2022: Impacts on the Railroads in Virginia



Winter Storm Frida was an Extreme Weather Event

- Railroads coordinated and monitored anticipated weather impacts
 - Amtrak monitored weather forecasts
 - Conference calls between NS, CSX, Amtrak, VRE, and MARC
 - Storm exceeded forecasted weather predictions
- Trees fell by the hundreds
 - CSX: over 700 trees removed from tracks
 - NS: over 500 trees removed from tracks
- Amtrak worked with CSX and NS to get trains to the nearest station
 - The safest place for passengers was onboard a stopped train until crews opened a safe path to reach the nearest station



Virginia State-supported Amtrak Services Affected

- Train 176 Roanoke to DC
 - Blocked between Lynchburg and Charlottesville for 12+ hours until returned to Lynchburg about 12am
- Train 84 Norfolk to DC
 - Blocked north of Quantico for hours before moving back to Quantico Station. Delayed 20+ hours
- Train 174 Newport News to DC
 - Arrived with slight delay in DC before the storm
- Trains 66, 86, and 94 cancelled





Additional Trains Affected

- Freight trains were among trains blocked in place
- CSX & NS shut down their tracks in Virginia
- VRE Service
 - NB morning trains made it to DC
 - SB afternoon trains on CSX cancelled
- Amtrak Long Distance Trains blocked or terminated in VA
 - Auto train blocked for hours near Lorton with trees under locomotive
 - Palmetto blocked for hours near Alexandria
 - Crescent blocked for 20+ hours between Lynchburg and Charlottesville
 - Other trains terminated at Richmond, DC, Petersburg, etc.

Conditions deteriorated for hours while relief efforts were underway...

Trees fell throughout the storm



Crews struggled to reach trains.

Hundreds of trees blocked trains



After Action Review

Discussion of Next Steps

Review:

- Communications with Customers
- Conditions on board during prolonged delays